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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,920	02/07/2005	Kazuhisa Mukai	MUKAI2	1923

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EXAMINER
BARNHART, LORA ELIZABETH

ART UNIT	PAPER NUMBER
1651	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,920	MUKAI ET AL.	
	Examiner	Art Unit	
	Lora E. Barnhart	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/7/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-20 as submitted 5/13/05 are currently pending.

Election/Restrictions

Applicant's election with traverse of the α-glucosyl saccharide species "liquefied starch" in the reply filed on 4/24/07 is acknowledged. The traversal is on the ground(s) that the saccharides in claim 4, for example, are unified by the presence of an a-1,4-glucan group (Reply, page 2, paragraph 4). The examiner agrees and withdraws the species election requirement. It is noted for the record, however, that applicants' discussion of the issue of search burden (Reply, page 3, paragraph 3) was irrelevant to the examiner's decision, since burden is not a consideration under the PCT Rules.

Examination will commence at this time on claims 1-20.

Claim Objections

Claims 2, 3, 5, 7, 11, 13, 15, 17, 18, and 20 are objected to because of the following informalities: They are drawn to processes of previous claims "where" conditions vary. In order to comply with standard U.S. claim language, the word "where" should be replaced with 'wherein" or "in which." Appropriate correction is requested.

Claim 3 is objected to because of the following informalities: It recites the single word "cannot" as two words. Appropriate correction is requested.

Claims 3, 5, 11, 15, and 20 are objected to because of the following informalities: There is an extra space within the name of the compounds in each claim. Correction is required.

Claims 5, 11, 15, and 20 are objected to because of the following informalities: They recite "10 w/w %," for example, when the expression is properly written "10% (w/w)." Correction is required.

Claims 7, 13, and 17 are objected to because of the following informalities: They require that the product be "collected in a form of syrup, powder, or crystal in its collecting," a limitation that does not comply with standard English. Appropriate correction is requested.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3, 5, 6, and 10-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 requires that glucoamylase be allowed to act on "the reaction mixture" of claim 1. There is insufficient antecedent basis for this limitation in the claim. Claim 1 does not recite a reaction mixture. Clarification is required.

Because claims 10-13 and 18-20 depend from indefinite claim 2 and do not clarify the point of confusion, they must also be rejected under 35 U.S.C. 112, second paragraph.

Claim 3 requires in one embodiment that two particular compounds be formed in sufficiently small amounts that "they cannot be detected in the step of forming 2-O-α-

glucopyranosyl-L-ascorbic acid," which is confusing because the forming step includes no detection step. Clarification is required.

Because claims 14-17 depend from indefinite claim 2 and do not clarify the point of confusion, they must also be rejected under 35 U.S.C. 112, second paragraph.

Claim 5 refers to "the reaction mixture" of claim 1, but there is insufficient antecedent basis for this limitation in the claim. Claim 1 does not recite a reaction mixture. Claims 11, 15, and 20 suffer similar deficiencies. Clarification is required.

Claim 5 requires that the "reaction mixture" of claim 1 (see above) comprise "5-O-α-glucopyranosyl-L-ascorbic acid and 6-O-α-glucopyranosyl-L-ascorbic acid in an amount of less than 0.1 w/w%," which is confusing. It is not clear whether the claim requires that each of these may be present in this amount or whether the total concentration of both may not exceed 0.1 w/w%. Claims 11, 15, and 20 suffer similar deficiencies. Clarification is required.

Claim 6 recites an optional step of pulverizing or crystallizing the product of the method of claim 1, which is confusing because it is not clear whether this optional aspect is necessarily part of the claim. Claims 12 and 16 suffer similar deficiencies. Clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al. (1992, U.S. Patent 5,137,723; reference A).

Yamamoto teaches mixing maltose and L-ascorbic acid (L-AA) into a single solution, then adding rat intestine α-glucosidase (RIAGase) to the solution to yield 2-O-a-D-glucopyranosyl-L-ascorbic acid (AA-2G; Experiment 2; column 9, line 8, through column 12, line 44). Yamamoto teaches that AA-2G may also be made using a method in which L-AA is combined with cyclodextrin in a solution to which is added cyclomaltodextrin glucanotransferase (CGTase; Examples A-1 and A-2, column 13, line 20, through column 14, line 34). Yamamoto teaches that the yield of AA-2G is enhanced by contacting the reaction product of Example A-2 with glucoamylase (Example A-3; column 14, lines 35-62). Yamamoto teaches recovering AA-2G by purification on gel permeation and cation exchange columns, drying AA-2G with a vacuum, and isolating >99% pure crystals of AA-2G (column 9, lines 28-43 and column 13, line 32, though column 14, line 62, for example). Yamamoto teaches conducting their method using any of several α-glucosyl saccharides (column 3, line 62, through column 4, line 3).

The RIAGase and CGTase of Yamamoto are both "α-isomaltosyl glucosaccharide-forming enzymes" in accordance with claims 1 and 8 in that they combine L-AA with α-glucosyl saccharides to yield AA-2G.

Claims 3, 5, 11, 15, 18, and 20 are drawn to inherent properties of the reaction and are, therefore, implicitly taught by Yamamoto.

Double Patenting

Applications 11/797,932 and 11/797,969 share inventors with this application and may claim overlapping subject matter; however, at the time of this Office action, these applications were unavailable for the examiner to consider. Double patenting rejections may be imposed over these applications when they become available if such rejections are appropriate.

No claims are allowed. No claims are free of the art.

Applicant is requested to specifically point out the support for any amendments made to the disclosure in response to this Office action, including the claims (MPEP 714.02 and 2163.06). In doing so, applicant is requested to refer to pages and line numbers in the as-filed specification, **not** the published application. Due to the procedure outlined in MPEP § 2163.06 for interpreting claims, it is noted that other art may be applicable under 35 U.S.C. § 102 or 35 U.S.C. § 103(a) once the aforementioned issue(s) is/are addressed.

Applicant is requested to provide a list of all copending U.S. applications that set forth similar subject matter to the present claims. A copy of such copending claims is requested in response to this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lora E. Barnhart whose telephone number is 571-272-1928. The examiner can normally be reached on Monday-Thursday, 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 571-272-0926. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lora E Barnhart

SANDRA E. SAUCIER
PRIMARY EXAMINER